Thus it is possible to generate approximately 5 micrometer diameter droplets at RF frequencies about two orders of magnitude smaller than the bulk waves used to generate "conventional" AIP droplets.

AMENDMENT TO THE CLAIMS

Please amend the claims as follows.

1. (Previously Amended) An apparatus for delivering a pharmaceutical product comprising:

a driver element to generate acoustic energy, the driver element designed to generate acoustic energy in pulses that are of a short duration and low frequency such that the droplet of pharmaceutical product is output from a capillary wave;

an acoustic lens to focus the acoustic energy generated by the driver;

a delivery system to maintain the pharmaceutical product in a position to receive the acoustic energy from the acoustic lens and cause ejection of a droplet of pharmaceutical product.

2. (Original) The apparatus of claim 1 further comprising:

a source of electrical power coupled to the driver element.

3. (Original) The apparatus of claim 1 wherein the acoustic lens is a fresnel lens.

4. (Previously Amended) The apparatus of claim 1 wherein the acoustic lens is a plastic lens.

5. (Original) The apparatus of claim 1 further comprising:

a second acoustic lens to focus the energy generated by the driver element and cause ejection of a second droplet of pharmaceutical product.

6. (Previously Amended) The apparatus of claim 1 further comprising:

a portable energy source to provide energy to the driver element;

a second driver element coupled to the portable energy source; and

a second acoustic lens to focus the energy generated by the second driver element, acoustic energy from the second acoustic lens to cause ejection of a second droplet of pharmaceutical product.

7. (Original) The apparatus of claim 6 further comprising:

a multiplexing circuit that directs RF energy from the portable energy source to the second driver element only when energy is not provided by the portable energy source to the first driver element.

8. (Canceled)

9. (Currently Amended) The apparatus of claim 1 wherein the driver element is programmed to output acoustic energy at a frequency below 15 MHz ~~to produce droplets less than 50 micrometers in diameter~~.

10. (Original) The apparatus of claim 9 wherein the droplets of pharmaceutical product output due to capillary action are less than 10 micrometers in diameter.

11. (Previously Amended) An apparatus for delivering a pharmaceutical product comprising:

a driver element to generate acoustic energy;

an acoustic lens to focus the acoustic energy generated by the driver;

a pharmaceutical product;

a delivery system to maintain the pharmaceutical product in a position to receive the acoustic energy from the acoustic lens and cause ejection of a droplet of pharmaceutical product, the delivery system including a pressurization system that controls the pressure of the pharmaceutical product.

12. (Previously Amended) An apparatus for delivering a pharmaceutical product comprising:

a driver element to generate acoustic energy;

an acoustic lens to focus the acoustic energy generated by the driver;

a delivery system to maintain the pharmaceutical product in a position to receive the acoustic energy from the acoustic lens and cause ejection of a droplet of pharmaceutical product; and

a sterilization mechanism that outputs ultraviolet energy to sterilize the acoustic lens.

13. (Original) The apparatus of claim 1 further comprising:

a MEMS cover to that protects the driver element from contamination when the driver is not outputting acoustic energy.

14. (Previously Amended) An apparatus to output pharmaceutical product for inhalation into the respiratory system of a patient, the apparatus comprising:

a portable energy supply;

at least one transducer coupled to the portable energy supply, the at least one transducer to output acoustic energy;

a plurality of lenses to receive and focus energy from the at least one transducer;

a delivery system to maintain a reservoir of pharmaceutical product, a distance from a top surface of a lens and a surface of the reservoir of pharmaceutical product is less than 150 micro meters, the reservoir of pharmaceutical product to

receive energy from the plurality of lenses the received energy to cause ejection of a plurality of droplets a distance from a top surface of a lens.

15. (Original) The apparatus of claim 14 wherein each lens in the plurality of lenses is a Fresnel lens.

16. (Previously Amended) The apparatus of claim 14 wherein each lens in the plurality of lenses is a plastic lens.

17. (Original) The apparatus of claim 14 further comprising:

a circuit that detects a flow of air going into a patient's lungs and couples the transducer to the portable energy supply when a critical air speed is reached.

18. (Canceled)

19. (Previously Presented) The apparatus of claim 1 wherein the delivery system includes a section for insertion into a human orifice, the section for insertion into the human orifice to increase an amount of the pharmaceutical product delivered to a patient.

20. (Canceled)

21. (Previously Presented) The apparatus of claim 1 wherein the capillary wave is generated by relaxation of a principle mound.

22. (Previously Presented) The apparatus of claim 14 wherein a diameter of at least one droplet in the plurality of droplets is less than 5 micrometers.

23. (Previously Presented) A method of delivering pharmaceutical product comprising:

generating a pulse of acoustic energy, the pulse having a short duration and low frequency such that capillary waves are formed, at least one capillary wave ejecting at least one droplet of pharmaceutical product; and,

positioning the droplet near a human orifice for inhalation into a respiratory system.

24. (Previously Presented) The method of claim 23 wherein the at least one capillary wave is formed by the relaxation of at least one principle mound of pharmaceutical product.